



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,619	09/30/2003	Joseph D. Tobiason	MEIP120131	4197
26389	7590	10/20/2005	EXAMINER	
CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC			DETSCHER, MARISSA	
1420 FIFTH AVENUE			ART UNIT	
SUITE 2800			PAPER NUMBER	
SEATTLE, WA 98101-2347			2877	

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/674,619	<b>Applicant(s)</b> TOBIASON, JOSEPH D.	
	<b>Examiner</b> Marissa J. Detschel	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☒ Claim(s) 6, 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/13/2004, 10/14/2</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statements filed on January 13, 2004 and October 14, 2004 have been fully considered by the examiner.

### ***Claim Objections***

Claim 6 is object to because of the following informalities: The word "of" appears to be missing after the word "plurality" in the phrase "the plurality fiber-optic receiver channels" in line 1 of this claim.

Claim 27 is objected to because of the following informalities: The word "the" is repeated twice in this claim in the phrase "a transmissive configuration such that the the operable interference illumination field". Examiner suggests removing a "the."

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this claim, the limitation "the other elements of the fiber optic readhead arrangement" appears in lines 1-2. What constitutes these other elements?

Claims 16 and 17, which are dependent on claim 15, inherit the problem of this claims, and are therefore also rejected under 35 U.S.C. 112, second paragraph.

Art Unit: 2877

Examination of these claims based upon prior art has been precluded until this rejection is overcome.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 18-21, 26, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Tokunaga (USPN 4,733,071).

In regards to claim 1, Tokunaga discloses a device for measuring the relative replacement between two members comprising a scale having a scale grating pattern formed on along a measuring axis direction (column 3, lines 12-23). A fiber optic readhead arrangement (20) positionable relative to the scale grating pattern ( $\alpha$  and  $\beta$ ) to provide an operable interference illumination field arising from light diffracted by the scale grating pattern ( $X_a$  and  $X_b$ ). The fiber optic readhead arrangement (20) is comprised of a plurality of fiber-optic receiver channels (22 and 23). Tokunaga discloses the use of a spatial phase mask portion (5) having a respective spatial phase and having its light-blocking elements arranged at a pitch that is operable for spatially filtering the light of the operable interference illumination field (column 1, lines 55-66). The fiber optic readhead includes at least one respective receiver channel optical fibers having an input end that receives a respective receiver channel optical signal light (column 3, lines 27-30). The respective receiver channel optical signal light received by

the at least one respective receiver channel optical fiber comprises optical signal light collected through the respective channel spatial phase mark portion over a respective collected light area having a collected light area dimension along the measuring axis direction that is at least one full period of the respective receiver channel spatial phase mask portion (column 2, line 67 to column 3, line 6). When the readhead is operably positioned relative to the scale grating pattern at least first and second respective channels (22 and 23) of the plurality of fiber-optic receiver channels spatially filter their respective positions of the light of the operable interference illumination field at the nominal receiver plane to provide at least first and second respective receiver channel optical signals ( $X_b$  and  $X_a$ ) having at least first and second respective signal phases (column 4, lines 56-65). Finally, the device outputs the at least first and second respective receiver channel optical signals along optical fibers to provide relative displacement measurement information in the form of a plurality of respective optical output signals, the respective output signals produced without the use of an electronic photodetector element (column 4, lines 56-64 and Figure 3).

In regards to claim 18 and 19, when there is a relative displacement between the fiber optic readhead arrangement and scale grating pattern along the measuring axis direction, each respective optical output signal comprises a sinusoidal function of the relative displacement, and each sinusoidal function varies from an idea sinusoidal function by at most 1/16 of the peak-to-peak variation of the sinusoidal function, and furthermore by at most 1/32 (column 2, lines 3-6).

In regards to claim 20, Tokunaga discloses a conventional optical rotary encoder with the fiber optic readhead arrangement (4) located on a first side of the scale grating pattern (2a), the scale grating pattern includes transparent elements that transmit transmitted light arising on a second side of the scale grating pattern, and the operable interference illumination field arises from the transmitted light (column 1, lines 39-45).

Regarding claim 21, the fiber optic readhead arrangement (20) is located entirely on a first side of the scale grating patterns, and the scale grating pattern is at least partially reflective to reflect diffracted light arising on the first side of the scale grating pattern, and the operable interference illumination field arises from reflected diffracted light (column 3, lines 12-23).

Regarding claim 22, the fiber optic readhead arrangement of Tokunaga's device includes at least one source of light comprising an output end of optical fiber (21) connectable to a remote light source that generates the light (column 3, lines 30-31).

In regards to claim 25, Tokunga's device comprises a reflective surface ( $\alpha$ ), and the fiber optic readhead arrangement (20) has an optical axis and the reflective surface is arranged at a location along the optical axis between the nominal receiver plane and the scale grating pattern such that the reflective surface deflects the optical axis by approximately 90 degrees. Furthermore, the fiber optic readhead arrangement and reflective surface are arranged relative to the scale grating pattern such that the nominal receiver plane is nominally perpendicular to the plane of the scale grating pattern. This can be done through rotation of the fiber optic readhead arrangement by the rotation mechanism (25) of Tokunga's device (column 5, lines 12-15 and Figures 7 and 8).

As to claim 26, the scale of Tokunaga's device is a generally planar disk-like member wherein the scale grating pattern is formed along a measuring axis direction that follows a circular path on the disk-like member (column 3, lines 12-23).

In regards to claim 27, the fiber optic readhead arrangement can be in a transmissive configuration such that the operable interference illumination field arises from transmitted light (column 1, lines 39-45).

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,906,315. Although the conflicting claims are not identical, they are not patentably distinct from each other because Applicant claims "a readhead operable to provide an operable interference illumination field", while USPN 6,906,315 claims "a readhead operable to provide an operable self-image." The operable self-image is disclosed as being known by other names such as a Talbot image (column 2, lines 18-22). A Talbot image is a

type of interference illumination field. Therefore, the operable self-image of USPN 6,906,315 is an example of an operable interference illumination field. Furthermore, the limitation of "at least three full periods" cited in claim 1 of USPN 6,906,315 (column 36, lines 8-9) covers the limitation of "at least one full period" cited in Applicant's claim 1.

Claim 28 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 41 U.S. Patent No. 6,906,315. Although the conflicting claims are not identical, they are not patentably distinct from each other because Applicant claims "a readhead operable to provide an operable interference illumination field", while USPN 6,906,315 claims "a readhead operable to provide an operable self-image." This issue was addressed in the preceding paragraph. Furthermore, Applicant's limitation of "a cylinder radius that is at most 5 millimeters" of claim 28 includes the limitation of "a circle having a circular diameter of at most 2 millimeters" cited in claim 41 of USPN 6,906,315 (column 43, lines 14-15). The cylinder of Applicant's claim is the cylinder holding the collected light area; the nominal light-carrying area of USPN 6,906,315 corresponds to an area of a circle with said diameter. The collected light area and the nominal light-carrying area are the same areas.

Claims 2-27 and 28-31, which are dependent on claims 1 and 28, are also rejected under the judicially created doctrine of obviousness-type double patenting.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJD



**HWA (ANDREW) LEE**  
**PRIMARY EXAMINER**